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Governor's Council on Solid Waste.
Solid waste management plan.

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Governor's Council on Solid Waste ✓

COMMONWEALTH OF MASSACHUSETTS

SOLID WASTE MANAGEMENT PLAN

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FOREWORD

The problem of solid waste management is reaching crisis proportion in many communities across the Commonwealth. Rising waste quantities, proliferating waste types and deterioration of the environment caused by waste mismanagement and poor processing and disposal facilities underscore an urgent need for new approaches to solid waste management at all levels of government.

The state solid waste management plan presented herein represents an aggressive policy direction within which the Commonwealth and its political jurisdictions can proceed toward a solution to the solid waste problem. The key objective of the plan is to provide efficient and environmentally sound management of solid waste through the establishment of a regional solid waste management system consistent with state, regional and local policies and needs. Municipalities not providing for their solid waste disposal in compliance with state standards would be required to participate in the state system. Citizen participation will continue to play an important role during the effectuation and implementation phases of the state solid waste plan.

This plan was prepared for the Governor's Council on Solid Waste by the Solid Waste Planning Unit, an interagency task force, consisting of representatives from the Departments of Public Works, Natural Resources, Public Health, and Community Affairs.

I. INTRODUCTION, CONCLUSIONS, RECOMMENDATIONS

INTRODUCTION

The problems associated with the management of solid waste material are not recent developments. Responsible handling of this material to promote its safe and efficient collection, transport, processing and disposal has proven to be a difficult task for most communities.

The current status of solid waste disposal operations within the Commonwealth illustrates that historically, individual communities, with few exceptions, have not provided an acceptable solution to the solid waste disposal problem. Furthermore, the tremendous increase in the current generation rate for solid waste material, and forecasts for additional increases, only serve to further increase this already unmanageable problem.

Concerns of an environmentally aware public, no longer content with inadequate disposal practices, serve to further complicate existing and future processing and disposal operations. Public and private response to this concern manifests itself through the initiation of programs and policies designed to improve solid waste management practices within the Commonwealth. Government acknowledgement of this concern is reflected through the development of minimum regulations for the processing

and disposal of solid waste within the Commonwealth. Continued support by the general public for voluntary reclamation of certain components in the solid waste stream is a further indication of public dedication toward a policy of upgrading existing solid waste management practices.

It is rather explicit that the magnitude of the solid waste management problem is rapidly outstripping the willingness of individual communities to provide the capital facilities, operating expenditures and land area necessary to institute and maintain effective control programs.

Recognition of this factor has resulted in the proposal that mandatory regionalization with its inherent economies be adopted as the policy guideline for development of a solid waste management program within the Commonwealth for communities not in compliance with state standards. Voluntary regionalization, though theoretically manageable in scope, in reality has proved to be an unworkable arrangement when proposed for solid waste activities. Voluntary districting for solid waste disposal in Massachusetts has been available through enabling legislation since 1961. To date, no such regions have become operative.

It is also recognized that provisions for a properly designed state-wide solid waste management system, comprised of the unit operations of collection, transfer, haul, processing,

and disposal necessitates partial subsidization by the Commonwealth. This funding support must be directed toward construction of those facilities required to properly aggregate and dispose of solid waste. Most facilities for the aggregation of solid waste will be transfer stations of a few standardized designs which can be utilized throughout the Commonwealth.

The concept of solid waste management envisioned for the Commonwealth is a joint venture between state, municipal, and regional governments and private enterprise. Responsibility for collection and transfer rests at the local level. Transport, processing and disposal will be the responsibility of the Commonwealth. The interface of these responsibilities occurs at the local or municipal transfer station where local responsibility concludes and state responsibility commences.

The Commonwealth is encouraged to make existing surplus or vacant state land available for siting of district and regional solid waste processing and disposal facilities. Positive response in this area would be indicative of a sincere commitment by the state to solving the solid waste disposal problem.

The type of processing systems selected for various regions within the Commonwealth will reflect refuse generation rates, refuse characteristics, haul patterns, collection

practices, and availability of markets for reclaimed material. Private enterprise will be encouraged to participate in the development of this solid waste system. Their assistance will be solicited at all levels of operation, beginning with collection, and following through to disposal of the solid waste. The role of the private sector is especially important to the state system in the processing stage. It is proposed that all processing at state facilities be done by private industry using private capital, on land leased from the state, with refuse provided by the state, in a manner approved by the state, and under long term contractual arrangements.

Final design of the systems for implementation across the Commonwealth will reflect partnership decisions made at the local and state level with private enterprise participation throughout the design stages of this process. Implementation will require both state financial assistance and legislative provision for authorization to formulate mandatory regional solid waste districts.

The transfer station concept proposed for the Commonwealth provides the opportunity to discontinue present unacceptable solid waste disposal practices and replace these with modern transfer facilities which will function to aggregate solid waste material prior to shipment to large regional processing and disposal facilities.

CONCLUSIONS

Current solid waste processing and disposal practices within the Commonwealth are generally unsatisfactory. The vast majority of existing land disposal sites fail to comply with state regulations regarding their operation. Many of these disposal sites are poorly located and physically unsuited for their intended purpose, and it is impractical to consider upgrading them to comply with state regulations. The proliferation of existing disposal sites (approximately 400) makes regulation, inspection, and enforcement both inefficient and ineffective. The operating performance of municipal incinerators is also poor. The majority of these should be indicted for both excessive atmospheric emissions and poor material burnout. For example, only three of the twenty-one existing municipal incinerators are capable of complying with state air pollution regulations.

On the positive side, there are communities within the Commonwealth that presently operate solid waste disposal facilities that are in compliance with state regulations and have the capability of continuing to do so. However, many disposal sites which operate satisfactorily have limited area available for future expansion. Proposals for new disposal sites which are physically and environmentally acceptable are often rejected

because of public preconceptions regarding solid waste disposal operations. This factor is effectively inhibiting the development of new solid waste disposal operations within the Commonwealth.

Operation, supervision, and management of solid waste facilities are currently conducted at the local level with little or no inter-municipal cooperation. This practice reduces the economies of scale and the environmental benefits that can be realized from a regional approach to the problem.

State responsibility for the various aspects of solid waste management is presently fragmented among different agencies, including the Departments of Public Works, Public Health, Natural Resources, Community Affairs, and those boards designated to supervise disposal of special wastes. The results are that control of solid waste management at the state level is ineffectual and inefficient.

There are vast amounts of recoverable materials contained within the solid waste generated in the Commonwealth. Present efforts to reclaim and recycle these materials are small-scale, fragmented, voluntary in nature, and have only a minor impact on the total quantity of waste generated.

Several factors have inhibited progress in the area of recycling. Markets for recovered materials are at best unstable and not in close proximity to the Commonwealth. Development of

local markets for reclaimed materials will require a stable, continuous supply of quality products. These supplies will only become available through the installation of automated reclamation, recycling, and resource recovery facilities at locations where large volumes of solid waste justify expenditures for efficient mechanical processing equipment.

RECOMMENDATIONS

Solid waste management facilities must be required to function in a controlled manner which minimizes adverse environmental effects. Disposal facilities which comply with current regulations will be permitted to continue operations. Those disposal sites which are unsuitable for their intended purpose must be phased out of operation. The community would then have two options: provide for waste disposal in conformance with state standards; or participate in the state system.

The number of operational processing and disposal facilities should be maintained as small as is economically and practically feasible. Existing publicly owned land should be given a priority consideration for use as sites for processing and disposal areas.

The Commonwealth should adopt a system that provides processing and disposal facilities capable of handling all solid waste generated within the state. Solid waste generated within the Commonwealth should be aggregated at municipal or intermunicipal transfer stations. Regional processing and disposal facilities will be integrated with the transfer stations through a state-wide transportation network. Transfer stations should be of compatible designs capable of incorporating

standardized equipment and operating procedures. The Commonwealth should be prepared to subsidize a portion of the cost to municipalities created by conversion to the transfer station concept. Determinations on the feasibility of upgrading existing incinerators or converting those incinerators to transfer facilities must be made by the Commonwealth. Those modifications which are justifiable should be subsidized.

State processing and disposal facilities should be of flexible design and capable of incorporating new technologies in solid waste management as they develop. Also, the system must be flexible enough to adapt to future plans for governmental reorganization, comprehensive land use planning, and state regionalization policy. State controlled and administered facilities will have to be provided for disposal of sewage sludges, special and hazardous waste materials.

Private enterprise should be encouraged to participate at all levels of the solid waste management system. The Commonwealth should take advantage of the benefits available through private contractual services for solid waste management.

One state agency must be responsible for all aspects of solid waste management including planning, administration, operations, regulations, and enforcement. State responsibility for solid waste management should rest with the Executive Office of

Environmental Affairs. Regional Planning Agencies will be responsible for identification of district boundaries, transfer facility locations, alternative sites for regional processing and disposal facilities, and coordination of municipal and citizen participation. Responsibility for coordination of resource recovery efforts, information systems, educational programs, and process development will be at the state level.

The Commonwealth must establish a long range goal of recovering from the solid waste stream those components that are economically feasible to reclaim. Maximum resource recovery should be encouraged through stabilizing existing markets for recovered materials; developing new markets and new secondary industries; supporting research and development of new technologies to increase resource recovery; establishing governmental procurement policies which encourage use of reclaimed materials; establishing economic incentives for recovery through tax policies; and conducting public information and education programs to increase awareness of the benefits of resource recovery.

II. DEVELOPMENT OF THE SOLID WASTE MANAGEMENT PLAN

PLANNING PROCESS

The development of the Massachusetts solid waste management plan has involved an innovative concept of public participation throughout the planning process.

The organizational structures responsible for developing a state-wide solid waste management plan are designed to include representation from a broad spectrum of governmental agencies and private interests. State responsibility for different aspects of solid waste management lies within the Departments of Public Works, Public Health, Natural Resources, and Community Affairs. Local responsibility lies with municipalities and regional planning agencies.

The state plan was developed by an interagency planning unit established to provide representation from each state agency involved with solid waste management (Figure 1). The planning unit is directly responsible to the Solid Waste Council. This council is the Governor's advisory body on solid waste matters, and is comprised of the secretaries of the Executive Offices of Environmental Affairs, Transportation and Construction, and Human Affairs.

The process of developing the state-wide plan began when the Department of Public Works contracted for the Raytheon

Solid Waste Management Report. This report evaluated the status of solid waste management within the Commonwealth and provides a basis for developing a state-wide management plan. Copies of the report were distributed to members of the General Court, municipal executive offices, regional planning agencies, libraries throughout the state, and others.

Regional and local interests in the planning process are represented by the Regional Planning Agencies These agencies cooperated in scheduling a series of public informational meetings to discuss the Raytheon Report. Funding for the regional meetings was provided by a grant from the New England Regional Commission. This grant award also supported a program developed by the Institute for Man and His Environment, at University of Mass., to evaluate the feasibility of the open planning process.

The purpose of these meetings was to provide two-way information and communication. The program was directed at informing the public of the benefits available through a regional approach to solid waste management Presentations were also made regarding current regulations for solid waste processing and disposal facilities. Alternative solid waste management systems for regional application were also described to the public. The presentations were followed by question and

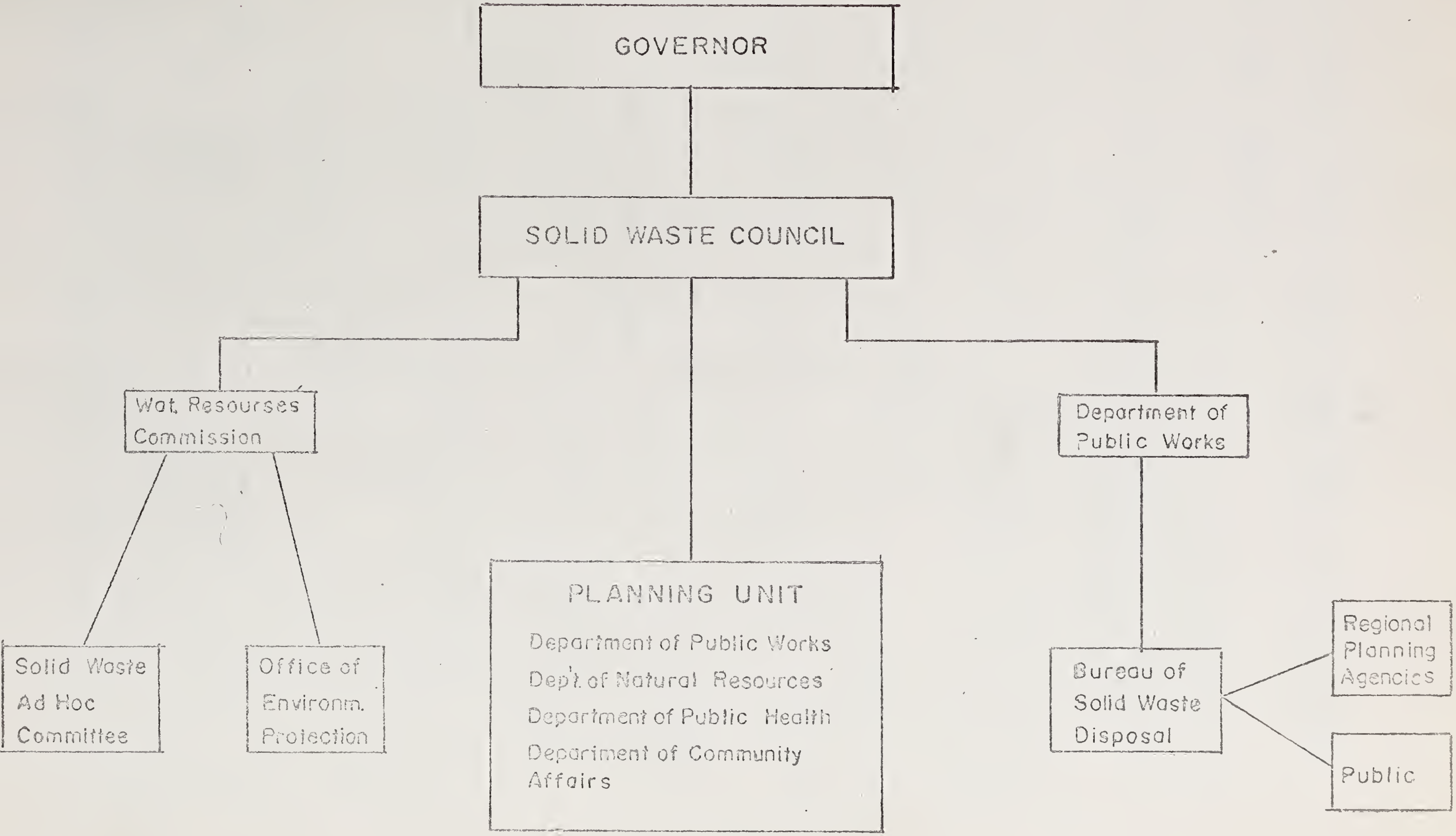
answer sessions which provided information to the planning unit regarding the concerns, attitudes, and ideas of local officials, private enterprise, and private citizens.

The regional meetings provided three sources of information to the planning unit. Transcripts were made of the proceedings and reviewed during development of the statewide plan. Questionnaires distributed at these meetings served as an additional source of public opinion regarding proposed regionalization, acceptable disposal practices, and the feasibility of recycling. The third type of information consists of letters and comments sent to the planning unit by persons attending these meetings. All pertinent information was catalogued and evaluated for incorporation into the planning process.

This open planning process of enlisting the assistance of a broad spectrum of interested parties has enhanced the planning unit's understanding of the Commonwealth's needs and desires with respect to solid waste management. The information conveyed to the planning unit has been employed as far as practicable in the final design of the solid waste management plan.

Massachusetts Solid Waste Management Planning Process

Organizational Structure


GOVERNOR
SOLID WASTE COUNCIL
Wat. Resourses Commission
Solid Waste Ad Hoc Committee
Office of Environm. Protection
PLANNING UNIT
Department of Public Works
Dep't. of Natural Resources
Department of Public Health
Department of Community Affairs
Department of Public Works
Bureau of Solid Waste Disposal
Regional Planning Agencies
Public

III. CURRENT STATUS OF SOLID WASTE MANAGEMENT IN MASSACHUSETTS

SOLID WASTE GENERATION

The present generation rate for non-agricultural solid waste within the Commonwealth is estimated at 7.5 million tons per year. This figure is expected to rise to 8.7 million tons in 1980. Trends such as this clearly indicate that solid waste generation is continuing to rise and could be expected to double by the year 2000.

The current and proposed estimates for the amounts of residential and commercial solid waste generated within each community of the Commonwealth are presented in a report developed by the Raytheon Service Company entitled Solid Waste Management Study Report prepared for the Bureau of Solid Waste Disposal of the Massachusetts Department of Public Works. This report provides a complete review of the status of solid waste management in Massachusetts, as well as a review of present technologies and recommendations for a state solid waste management plan. This three volume report was given broad distribution, including copies to all municipal executive offices and to libraries throughout the state. The report provided the data base for the state management plan and should be referred to for specific information upon which the general conclusions of this plan are based.

SOLID WASTE PROCESSING AND DISPOSAL

Current status of disposal operations within the Commonwealth indicates that the vast majority of the communities operate waste disposal facilities that are not in compliance with state and federal standards. There are several factors which operate to place these facilities in their current classification of unsatisfactory. The majority of the land disposal areas have been poorly sited, such that they become susceptible to infiltration by either or both ground and surface waters. Poor operating practice further reduces the effectiveness of these disposal areas by permitting water to enter the deposited refuse material and promoting the formation of leachate. Additional problems with these facilities relate to vermin infestation, recurrence of open burning, problems with blowing papers, excessive dust and noise pollution from vehicular traffic, and interference with daily operations by unauthorized personnel. A blanket conclusion which might be drawn regarding these facilities is that they are generally poorly located and operated at less than recommended specifications.

There are, however, some disposal areas within the Commonwealth that comply with state regulations, or could be brought into such status with either a minimal capital expenditure or slight modification of operating procedure. Under the proposed

plan those public or private facilities which comply with current regulations could continue operation. A higher priority for upgrading those not in compliance should be given facilities which have the capacity for large scale operation, or have a projected life of 10 or more years at current operating capacity. Such systems providing long range requirements are preferential to those having a limited daily operating capacity or a short projected useful life.

The majority of the municipal incinerators found within the Commonwealth operate in violation of state and federal regulations regarding allowable atmospheric particulate emissions. Currently, only 3 of the 21 incinerators within the state are capable of complying with air pollution control regulations.

All but three operating incinerators in Massachusetts were constructed prior to 1968, and therefore do not incorporate the latest technological innovations in incinerator design. Recent advances in the design of refuse charging equipment, mechanical grate design, furnace design, development of air distribution systems, application of auxiliary fuel systems utilization of modern air cleaning technology, and incorporation of systems to utilize waste heat are not employed in most of the existing incinerators. Therefore,

most of these facilities would be classified as first generation incinerators, while current technology is at a second or even third generation level. These facilities are quite obviously mechanically outmoded.

Some of these facilities could be upgraded to meet emission regulations, but several are clearly obsolete and should be phased out of operation. Initial estimates of the practicability for upgrading existing incinerators suggest that many communities should carefully consider upgrading these to enhance their operational capability.

The primary motivation for examining the feasibility of upgrading these facilities is that the majority of the plants are still being amortized; are currently on line at acceptable locations, such that there is no need for land taking, public hearings, etc.; are probably situated such that haul distances from refuse generation sources are practicable; and represent a capital outlay sufficient to justify a study to determine if their productivity might be increased through mechanical alteration, improved operating procedures and management, or both.

In recent years there have been some innovative activities in advancing the solid waste processing and disposal practices in the Commonwealth. Some improved practices have actually been put into operation, while others are either under construction

or are on the drawing board. For example, a small number of communities have recently installed transfer station facilities and transport their waste to privately owned regional disposal facilities. A high density compaction and baling facility in Cambridge has been in operation serving a portion of the metropolitan Boston area. A private resource recovery facility is under construction in Holliston and is expected to be in operation this year. Under a federal grant program, an incinerator residue processing facility is in the planning stage in Lowell. A private steam generation refuse incinerator is in the planning stage in Saugus. These are examples of some of solid waste practices which are now in various stages of development, but may play an increasingly important role in the future of solid waste management in Massachusetts.

SOLID WASTE LEGISLATION

The concept of regionalization as a solution to the solid waste management problem has been available to all communities of the Commonwealth since 1961, when enabling legislation was enacted authorizing and establishing procedures by which two or more contiguous cities or towns could voluntarily form a regional incinerator district. The scope of this enabling legislation was broadened in 1965 to include disposal methods other than incinerators, and authorized regional refuse disposal districts. In 1969, enabling legislation established the Bureau of Solid Waste Disposal in the Department of Public Works, with authority to select sites, designate disposal districts, and contract for facilities and equipment.

In addition to these general enabling acts authorizing the establishment of regional solid waste facilities, a variety of special acts have been passed in recent years authorizing the establishment of regional disposal districts within the Commonwealth. Examples include: St. 1971 C. 747, Upper Blackstone; St. 1971, C. 928, Upper Assabet; St. 1972, C. 568, French-Quinebaug; and St. 1972, C. 603, Upper Ware River.

Despite these legislative efforts, Massachusetts is today without a single operating regional refuse disposal district. The recurring theme in each of the enabling acts has been voluntary

participation by communities in the regional system. The necessary voluntary cooperation has not been a reality to date.

Currently pending in the Massachusetts Legislature is a bill, H-6643, developed by the Joint Committee on Natural Resources and Agriculture, which would authorize many of the proposals included in the state management plan presented herein. H-6643 provides for the limited type of mandatory regionalization proposed in this plan. It also provides for many of the financial programs necessary for implementation of the type of statewide solid waste management system proposed here. Innovative legislation of this type is an essential prerequisite to the successful development of a new approach to solid waste management in Massachusetts.

REGULATIONS AND ENFORCEMENT

Responsibility for statewide regulation of solid waste disposal facilities lies with the Department of Public Health. Chapter 111, Section 150A of the Massachusetts General Laws, requires the Department of Public Health to adopt rules and regulations and to approve the plans and design of all solid waste facilities. The Department adopted "Regulations for Disposal of Solid Waste by Sanitary Landfill" to minimize the air, land, and water pollution caused by land disposal of solid waste.

These regulations can only be effective if vigorously enforced. The current enforcement efforts of the Commonwealth have been restricted because of a lack of enforcement personnel, proliferation of waste disposal sites, and a lack of alternatives for those communities ordered to close their facilities for operating violations.

Chapter 111, Sections 142 A through E of the General Laws, provides that the Department of Public Health shall promulgate rules and regulations and review plans and controls related to the operation of municipal incinerators. Regulations have been adopted and an overall implementation plan designed to meet Federal Air Quality Criteria.

The Division of Water Pollution Control has the responsibility for regulating hazardous waste disposal. Regulations entitled Handling and Disposal of Chemical and Other Hazardous Wastes, adopted under Chapter 21, Section 57, provide for the supervised disposal of these materials.

REGIONALIZATION

The concept of regionalization for solution to the solid waste management problem has been available to the Commonwealth through enabling legislation since 1961. During the past 12 years, several regions have been proposed, a lesser number formed, and none put into operation. Several have had special legislation passed to facilitate their organization, but these, too, are not operational.

The only statewide recommendation for regionalization has been formulated by the Raytheon Service Company in their 1971 - 1972 study for the Department of Public Works. Raytheon's district recommendations are preliminary in nature and are subject to modification. It is anticipated that there will be recommendations for altering some of the present delineations in favor of different boundaries. Recommendations from the Regional Planning Agencies and other sources will be considered by the Commonwealth before formal district and regional delineations are made.

The nature of regionalization of solid waste management to date has been that of voluntary participation. Only voluntary participation has been authorized by legislation. In order to implement a regionalization proposal involving any degree of mandatory participation, new legislation will be required.

TRANSPORTATION

The Commonwealth is widely traversed by high speed rail and highway networks. The principal rail systems within the state are those of the Boston and Maine, serving the northern section of the Commonwealth, and the Penn Central, which traverses the southern sector. In combination, these two carriers have 1573 miles of operating rail bed.

The proposed regional system for solid waste management should consider utilization of these systems to achieve economic haul of the large volumes of waste collected through the transfer system design. It would provide a more flexible system if sites selected for regional processing and disposal were to have adequate rail and highway access or be in close proximity to such access.

Primary highway networks within the Commonwealth are respectively, the Interstate, State, and U. S. highway systems. Interstate routes 90, 91, 93, 95, and 495 provide for both east-west and north-south flow of traffic. State routes 2, 9, 24, 25, and 128 also provide the same east-west, north-south flow of traffic. United States routes 3, 6, 20, 202, and 7 also contribute to the same flexible system for statewide mobility. These primary highway networks will provide necessary connections between municipal and district transfer stations and district and regional facilities.

PRESENT SOLID WASTE MANAGEMENT EFFORTS

There is currently within the Commonwealth no coordinated, continuous, and cooperative program aimed at providing a solution to the statewide solid waste management problem. The Commonwealth has not provided the necessary legislative authority, financial commitment, and administrative support to develop an effective solid waste management system for Massachusetts.

Primary responsibility for solid waste management planning rests with the Bureau of Solid Waste Disposal. Created in 1969, the Bureau of Solid Waste Disposal has provided funding for five major studies related to solid waste management within Massachusetts. The principal effort in this area was the Raytheon Solid Waste Management Study Report which was completed in 1972. Raytheon recommends adoption of regionalization as a solution to the problem of solid waste disposal in Massachusetts.

Additionally, three short term studies have been undertaken in the greater Worcester, Springfield and Lawrence areas. These are aimed at developing short term solutions to acute regional disposal problems. The scope of these programs is to provide for three to five year solutions to acute local problems, while adopting waste management programs that are compatible with the long range goals of the Commonwealth.

A major study to evaluate the feasibility of a statewide or interstate recycling system has recently been contracted for. The purpose of this program is to provide a long term strategy for successful implementation of resource recovery systems across the Commonwealth. The information obtained through each of these studies has been employed in the development of this solid waste management plan.

Several new programs in solid waste management have begun to show positive results. The most encouraging of these relates to continual support within both the public and private sectors for voluntary recycling programs. Many communities across the Commonwealth have undertaken such programs under the auspices of groups such as the League of Women Voters, Conservation Commissions, youth groups, etc. These programs have continued to provide impetus to the proposal for recycling greater percentages of the components within the solid waste stream. Many of these programs are illustrating the potential for success of the recycling concept.

In addition to the voluntary recycling programs, there have been various activities, discussed earlier, in which public and private advances in solid waste practices are in various stages of development.

Several Regional Planning Agencies within the Commonwealth are completing solid waste studies within their respective areas. Some of these reports are preliminary in nature and simply relate to evaluating the magnitude of the solid waste problem. Others proceed one step further and provide recommended methods to solve the problem. Unfortunately, no agency of the Commonwealth has had the capability for coordinating these separate studies to insure that they provide for a uniform level of comprehensive planning across the state. The result has been that several regional planning agencies are nearing completion of their studies and are approaching the implementation stage for facilities planning. Other regional planning agencies are only commencing such programs, while still others are only now soliciting funds for such studies.

Furthermore, there has been little coordination between those state agencies that are responsible for solid waste activities. Too often, activities are undertaken in one sector without consulting other agencies that may also have jurisdictional responsibility. This inefficient and uncoordinated approach to solid waste management has served to stifle private enterprise in their efforts to provide service toward solving this problem. For example, primary jurisdiction for site assignment at the local level has resulted in the rejection of nearly

all recent proposals for public or private disposal areas. These rejections have been prompted by past operating practice, increased expenses, and concerns for environmental pollution.

Many organizations have approached both the Commonwealth and its member communities with proposals for construction of incinerators, recycling facilities, and composting plants. However, technical assistance has not been available to commnities for evaluation of proposed systems. Furthermore, no regulations exist to provide guidelines to organizations attempting to establish innovative disposal processes within the Commonwealth.

In conclusion, state, regional, local and private efforts toward improving solid waste practices are generally uncoordinated, poorly financed and administered, and lack strong legislative authority for program implementation. In all areas from collection through disposal, the Commonwealth and its political subdivisions are not now effectively providing for the public's need in solid waste management. The splintered approach to solid waste planning and management have not served to alleviate the near crisis situation in some areas of the Commonwealth. For example, if a large incinerator or landfill in a metropolitan area were to become inoperative tomorrow, the State is not prepared to offer either an alternative disposal

site or a plan for processing and disposing of the generated refuse. There are many disposal sites causing extensive environmental pollution which should have been closed. However, they retain their operating status because no provisions have been made for alternative disposal facilities.

IV. RECOMMENDED SOLID WASTE MANAGEMENT PROGRAM

SYSTEM CONCEPT

The solid waste management plan proposed for the Commonwealth is the first attempt at a systematic statewide approach to the solid waste problem. It is based on the concept of regionaization of solid waste management functions. Participation in the state system would be mandatory for municipalities which are not providing for their solid waste management needs in a manner which complies with state standards. Under the proposed system, waste in most communities would be aggregated at a transfer station facility. Under this system, the collection and haul of refuse to transfer facilities is a local responsibility, as is the operation of the transfer facility. The transfer of the aggregated refuse to state controlled district or regional processing and disposal facilities is the Commonwealth's responsibility. At the state controlled processing and disposal facility, disposal operations would be conducted by private enterprise under contract with the state. Processing would be by private enterprise with private capital, on land leased from the state, with refuse provided by the state, and by processes approved by the state, and under long term contractual arrangements. Responsibilities of the municipal, state and private sectors in this system are indicated in Figure 2.

The proposed system would provide for the collection, haul, transfer, processing and disposal of all solid waste material generated within the Commonwealth. Provisions will be made in the system for the handling of special and hazardous wastes. Implementation of the transfer concept provides for the aggregation of waste material at various regional locations in the Commonwealth. These regional centers would serve as processing and disposal locations for solid waste.

The use of transfer facilities as the locations for aggregating municipal, commercial and industrial waste is not a new concept. Several communities within the Commonwealth operate such facilities and haul their refuse outside local geographic boundaries for disposal. These facilities can be attractively designed and are compatible with siting in industrially zoned locations. There are several advantages to the installation of this type facility. Local resistance to construction of these facilities (often resembling warehouse operations) is less than that for a comparable landfill operation. There is little or no environmental or aesthetic pollution associated with a transfer station. Traffic entering and leaving the completely enclosed facility may contribute to neighborhood noise and dust pollution, but these are minimal for properly located

and designed facilities. Also, cost of siting, constructing, and operating transfer stations should be less than that for comparable sanitary landfills.

In some municipalities, depending largely on the availability of collection service and proximity to district or regional processing and disposal sites, direct haul to state facilities may be more economically sound than having a transfer facility. Where such alternatives exist, the most efficient and economical method will be encouraged.

The principal merit to this proposed system is its inherent capability to provide for aggregation of solid waste material into volumes sufficient to support large scale processing and disposal operations. Such operations provide for economies of scale, and at the same time reduce the overall number of required disposal areas. The current proliferation of land disposal areas with their concomitant abuse of the environment is a motivating force for adopting the proposed regional concept. The present unsatisfactory monitoring of waste processing and disposal facilities is in part related to the large number of such facilities located in the Commonwealth.

Regional processing will provide sufficient amounts of solid waste at central locations to justify installation of

mechanical reclamation equipment by private industry. Mechanical classification of the solid waste stream will provide a stable supply of quality recycled material that should encourage private industry to incorporate these resources into their industrial operations. A continuous stable supply of quality recycled material is necessary if a secondary materials industry is to develop and flourish.

The transfer station concept is recommended because it provides a uniformly designed system with statewide application. The physical designs of these facilities, incorporated equipment and method of operation should be standardized on the basis of capacity of a particular facility. Once selected, the facility will be readily incorporated into a larger transfer concept which serves the entire Commonwealth through a series of mutually compatible processing and disposal facilities. The result of initiating such a standardized system will be a solid waste management operation which is uniform in scope throughout the Commonwealth. A standardized system will provide flexibility in the system, in that the emergency closing of one facility may be safely handled by transferring its normal waste load to a similar facility that is proximal to it. Quality control of each process will be more readily available when all systems are compatible. Operating manuals, personnel

qualifications, and training programs will also be standardized by the Commonwealth to increase efficiency at each facility.

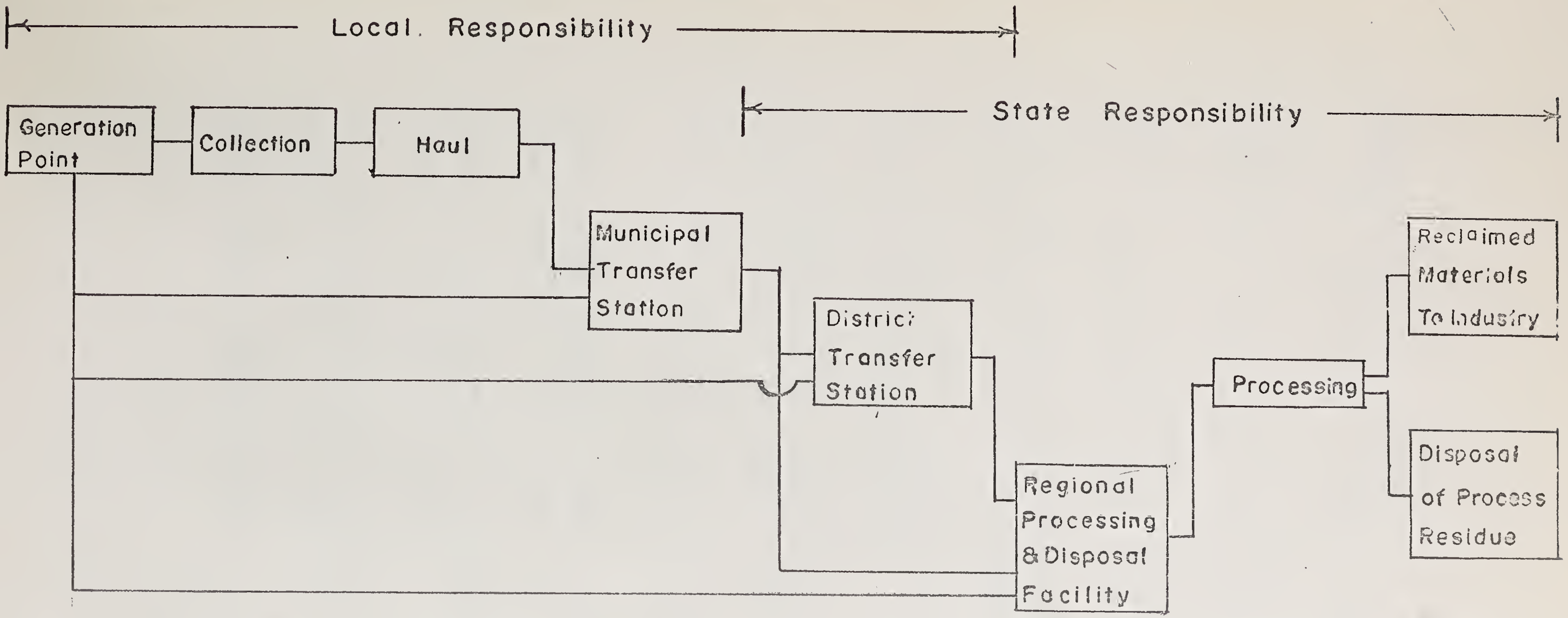
The processing and disposal facilities in the proposed system will be controlled by the Commonwealth. On sites owned by the Commonwealth, disposal operations will be carried out by private contractors in accordance with specifications and regulations established and enforced by the Commonwealth. The reduced number of disposal sites, together with the state control of such sites, will facilitate enforcement of standards for the proper operation of these facilities.

The proposed regional system of solid waste management is designed to take full advantage of the expertise of private enterprise in the solid waste field. In addition to using private contractors for such state responsibilities as transporting and disposing of aggregated wastes, the essential function of processing solid waste is proposed as a major role of private industry in the system. The system provides that at the district or regional processing and disposal centers, the state will lease sites for processing facilities with an assurance of a volume of aggregated refuse. It is anticipated that private enterprise will enter into long term agreements to process the refuse, using private capital for the required

structures and equipment. Such processing is expected to significantly reduce the amount of waste to be disposed of, to recover from the waste stream those materials which can be reclaimed, and to provide a stable and quality supply of reclaimed materials suitable to encourage the development of a strong secondary materials industry in the Commonwealth.

It is the intent of the Commonwealth that the proposed system be designed to recover from the waste stream those elements that are economically feasible to reclaim. The system would also be designed to provide all economically feasible volume reduction of those elements of the waste stream that are not recoverable, and thus minimize the land requirements for ultimate disposal of process residue.

PROPOSED TRANSFER CONCEPT FOR SOLID WASTE MANAGEMENT


Local. Responsibility
State Responsibility
Generation Point
Collection
Haul
Municipal Transfer Station
District Transfer Station
Regional Processing & Disposal Facility
Processing
Reclaimed Materials To Industry
Disposal of Process Residue

Municipal Responsibilities	State Responsibilities	Private Responsibilities
Collection	Transport from transfer to processing and disposal facilities	Collection
Transport		Transport
Processing at municipal transfer stations	Administration of district and regional facilities	Processing and reclamation
		Operation of municipal, district or regional facilities
	Regulation, inspection and enforcement	Secondary materials industry development

Figure 2

IMPLEMENTATION AND DEVELOPMENT

The solid waste management system proposed for Massachusetts will be developed through a partnership arrangement between the Commonwealth and the state's regional planning agencies. The development and implementation of the system will be accomplished through a phased process involving four stages over a period of seven or more years. Regional planning agencies will be involved throughout the process in planning and developing their respective regional sub-systems through contracts with the Commonwealth. The Commonwealth will develop the statewide system, integrating each regional system into a total solid waste management system capable of handling all solid waste generated with the state.

Stage I of the process involves continued planning and study of the concept of regionalized solid waste management in Massachusetts and an examination of the feasibility of resource recovery under a statewide system. This stage, scheduled for completion by January 1, 1974, includes the completion of reports by the state's regional planning agencies, and a resource recovery study undertaken by Arthur D. Little, Co., under contract with the state.

It will be the responsibility of the regional planning agencies to: update regional waste generation data; propose district configurations; identify alternative locations for solid waste facilities, including possible regional processing and disposal sites; and recommend feasible systems for aggregating the solid wastes generated within their respective areas.

In addition to these regional activities, a feasibility study of resource recovery in a statewide solid waste system will be undertaken. This study is aimed at identifying potential markets for reclaimed materials and the quantitative and qualitative requirements of such markets, and at assessing the possibilities of establishing an extensive resource recovery and secondary materials industry in Massachusetts.

Stage II of the development process, scheduled to occur between January 1974 and mid 1974, would involve the assimilation and review of reports complete in Stage I with other studies already completed by the Commonwealth, including the Raytheon study, and short term studies recommending immediate solutions to acute waste problems faced by communities in the greater Springfield, Worcester and Lawrence areas. Based on these reports, the Commonwealth would designate district configurations to be employed in each region. Participation in

the state system would be mandatory for municipalities within a designated district which were not in compliance with state solid waste standards when the state system was implemented in that district.

Also during Stage II, the Commonwealth would continue to develop and implement administrative, legislative and financial programs necessary for the implementation of the statewide system. Organizational structures necessary to operate a regionalized system would be detailed. Criteria for determining user fees in the system would also be established. Guidelines for phasing out unsatisfactory solid waste facilities would be developed, as would a few standardized designs for transfer facilities.

Furthermore, during Stage II, it is recommended that the Commonwealth undertake an examination of existing solid waste facilities, especially incinerators, to determine the feasibility of either upgrading them to comply with state and federal standards, or converting them for continued use as possible transfer or processing facilities. The capital investment in these facilities, their ability to effect significant volume reduction, their often favorable location with respect to generation points, and their status as accepted solid waste sites dictate that serious consideration be given to their incorporation into the state solid waste management system. It is

recommended that upgrading or conversion of these existing facilities be partially subsidized by the Commonwealth.

It may also be possible at this early stage to begin land banking acceptable sites for future regional processing or disposal areas.

Stage III of the development process, expected to commence in mid 1974, involves the full scale implementation of the regionalized system in at least two areas of the Commonwealth, one urban district and one rural district. This will entail the designation and acquisition of sites for transfer, processing and disposal facilities, the design and construction of facilities, closing of improper operations, and developing transportation networks and schedules. Full implementation on this limited basis will provide a demonstration of the system concept which can then be analyzed and refined prior to full statewide implementation.

While full implementation in these limited areas is underway, activities in other areas will include continued acquisition of acceptable future sites for facilities and continued coordination of solid waste planning efforts. Financial assistance will be provided to regional planning agencies which are deficient in their solid waste planning, in order to bring all areas of the Commonwealth to a level of planning necessary for

program implementation. Other solid waste planning efforts within the Commonwealth will be reviewed and coordinated to determine the possibility of incorporation into a statewide management system.

Full implementation on a statewide basis in Stage IV is expected to begin in 1976, and be complete in 1980. Based on the experience gained in the Stage III implementation and an intensive evaluation of the systems developed on that limited basis, a refined regionalized solid waste system will be implemented in all regions of the Commonwealth over a period of years. While the basic system concept will be the same throughout the Commonwealth, the design of the transfer concept is such that alternative waste processing methods are easily assimilated into the management system. All potentially viable processing systems will be considered for installation within the proposed integrated system framework. Selection of the appropriate processing methods is compounded by the heterogeneous nature of the waste management problem. Refuse generation rates, collection practices, haul patterns, and markets for reclaimed materials, will all influence both the location of processing facilities and the type of processing employed. It is anticipated that more than one type of processing will be employed in the state system. Selection of these methods will

be based on several factors as noted above, and will be compatible with the needs of the region served.

The system must remain flexible to utilize new processing technology. The dynamic nature of the solid waste industry indicates that new processing technology is certainly on the horizon. The implementation of the state system requires that private industry be encouraged to provide their services in collection, transfer, haul, processing, resource recovery, and disposal operations. In some areas it may be the case that the same private operators will provide collection, transfer, haul, processing and disposal for a district or an entire region. The Commonwealth's role in administering the statewide program would not include operation of facilities. Control over the system will be effected through contractual specifications with system operators, operating procedures, rules and regulations and inspection and enforcement programs.

ADMINISTRATION

The proper administration of the proposed solid waste management system for Massachusetts will require a restructuring of the administrative framework of solid waste responsibilities in state government. It is proposed that the management, regulatory and enforcement functions pertaining to solid waste become the responsibility of one agency. The current solid waste functions in the Departments of Public Health, Public Works, Natural Resources and the Water Resources Commission would be consolidated under the Executive Office of Environmental Affairs.

The consolidated solid waste agency would be responsible for the administration of all the existing laws and regulations related to solid waste. These laws and regulations are now administered in a fragmented manner by various state agencies. Included in the implementation of the proposed statewide solid waste management system are the following operational programs which would be administered by the solid waste agency: public education; personnel training; research and development of new solid waste management techniques; certification of operating personnel; marketing of recovered materials; design and engineering of transfer facilities; inspection of facilities; enforcement of regulations; construction and administration

of district and regional facilities; financial assistance for municipal facilities; and general administration of the statewide system and all laws, rules and regulations relating to solid waste in Massachusetts.

The administration of various aspects of the proposed statewide system will be the responsibility of one or more of three separate and distinct groups. (See Figure 2.) Municipalities will retain administrative and operational control over collection and transportation of waste materials to the transfer stations within each district, as well as the operation of municipal transfer facilities. State responsibilities will include the administration of the processing and disposal of waste materials on the regional level, as well as regulatory, inspection and enforcement functions at all levels of the system. The state functions will remain at the management level and will not include actual staffing of the state administered facilities. Operating personnel will come from the private sector under contract with the state. The state management operations will be regulatory and administrative in nature. The private sector will be utilized for operational functions through contracts with the state and municipalities at any level, from collection of waste to final disposal. Private enterprise using private capital will be

utilized to provide the processing and reclamation of solid waste through contracts with the state on sites leased from the state. The system will encourage private entrepreneurs and will actively support research and development of improved waste handling methods.

Municipal Responsibilities

Collection

Transport to municipal or district or regional facilities

Processing at municipal transfer stations

State Responsibilities

Possible transport from municipal transfer stations to district or regional facilities

Transport from district to regional facilities

Administration of district and regional facilities

Regulation, inspection and enforcement of all aspects of waste handling

Private Responsibilities

Collection

Transportation

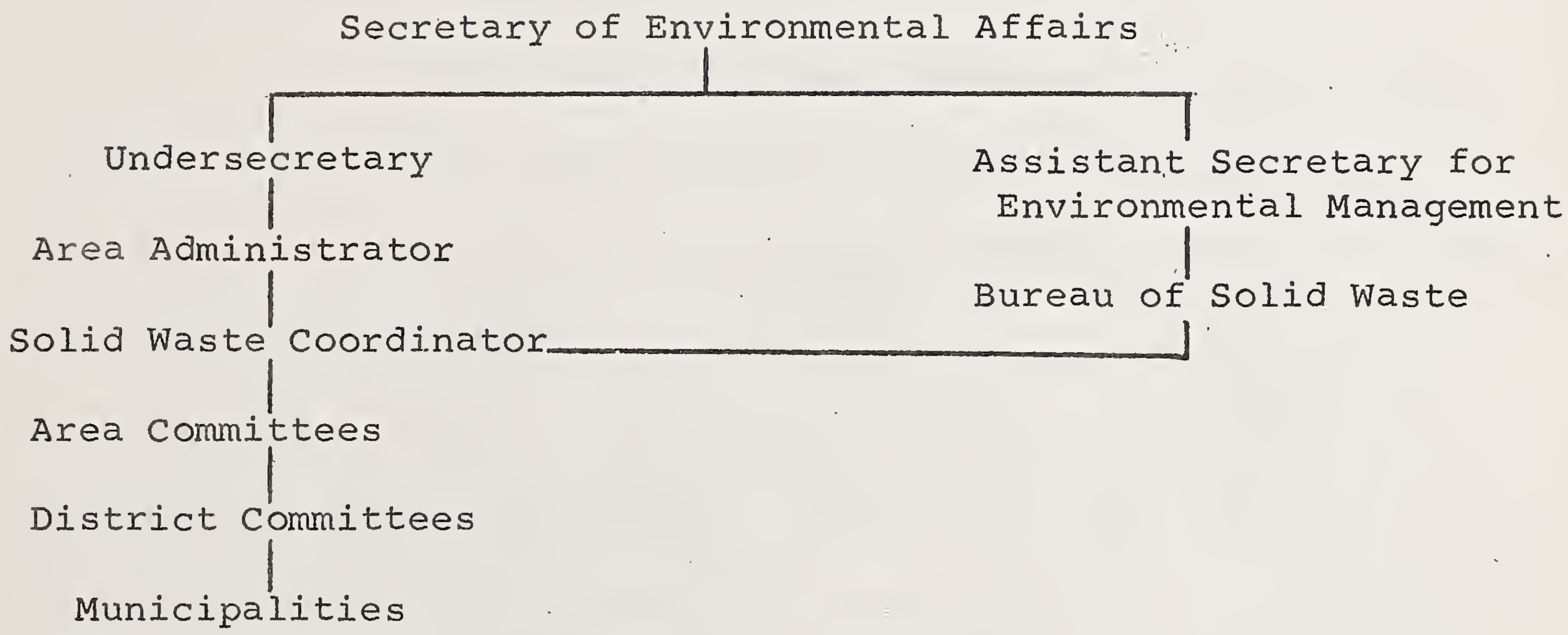
Processing and reclamation

Operation of municipal, district or regional facilities

Secondary materials industry development

The proposed statewide system is based on a regional approach to solid waste management. The focus of the regional structure lies in the district and regional configurations which will be decided upon during Stages I and II of development. Responsibility for the administration of the state system at the regional level will lie with the administrators of state administrative areas. There will be a solid waste coordinator in each such area office who will coordinate and administer solid waste programs and operations within the area. Local coordination and communication will be channeled through district and area committees. The district committee will be comprised on one member from each municipality who will be appointed for a three year term by the mayor or selectmen of the municipality. The area committee will be comprised of the chairman from each district committee, ex officio. Both of these committees will be advisory in nature. However, the chairman of the area committee will serve as a member of the area advisory board which will have additional powers.

The lines of authority and communication proposed for the regionalized solid waste management administrative structure are illustrated in the following diagram:



FINANCING

The proposed solid waste management system would be financed through a combination of three funding sources. Each funding source will be used to support those activities of the system which provide benefits, direct and indirect to the public or private sector of the population from which the funds are generated. The different funding mechanisms are aimed at distributing the costs of the state system on a fair and equitable basis.

There are three general categories of costs associated with the proposed state system. First, the state administered segments of the system will have operating costs which will be paid through a system of user fees. These fees will be charged to both public and private users of the state system based on the amounts and types of waste generated. User fees would be established or amended, after a public hearing, by the solid waste agency. Such fees would be set to meet the net operating costs of the state administered elements of the system. It is anticipated that the user fee schedule would provide for different rates for special wastes including hazardous wastes, bulky wastes, and specially prepared wastes. Such differential rates would allow for fees

which realistically reflect the actual costs of processing and disposing of a particular type of waste. For example, while hazardous chemicals and pesticide wastes may require costly special handling, preseparated materials may be reclaimed with minimal processing. Furthermore, as an incentive to communities hosting regional solid waste disposal facilities, a discounted user fee for such communities is anticipated.

The second category of costs of the proposed system are statewide in nature. These expenditures include the costs of programs benefiting the Commonwealth as a whole and the capital costs of establishing the network of facilities necessary to make the state system available to all citizens of the Commonwealth. Specifically, this category includes: the administrative costs of the state solid waste agency above the operational level; research, demonstration and grant programs undertaken to advance the state of the art of waste processing, reclamation and disposal; the capital costs of state facilities; and costs of subsidizing the transition from a municipal to a regional system of disposal.

These costs will be assessed to all municipalities in the Commonwealth. The assessment formula will be based on

the average percentage of valuation and population, determined as to any city or town by adding together the percentage which the valuation of the same bears to the total valuation of the cities and towns of the Commonwealth, and the percentage which the population of such city or town bears to the total population of the cities and towns of Commonwealth, and dividing this sum by two.

The third category of costs associated with the proposed statewide system are local in nature. These expenditures include: collection costs; transportation costs; operating costs of municipal facilities; and the local share of the capital costs of municipal facilities. These costs are essentially municipal in nature and will vary greatly with the degree of service provided in a municipality. These expenditures will be funded solely with municipal monies with no state financial involvement.

The proposed state solid waste program would include two types of financial incentives aimed at easing the transition from a local to a regional approach to solid waste management. It is proposed that there be financial incentives available to communities hosting regional processing and disposal facilities. Also a financial assistance program is proposed to assist participating cities and towns in the conversion from a local to a regional system.

The financial incentives to host communities would include: discounted user fees for disposal at the regional site; payments in lieu of taxes on property used for a regional site; and eventual transfer of the site to the community at no cost after the facility has been completed and has been restored by the state to a useful and desirable condition, consistent with the proposed municipal use of the site.

The proposed program to assist cities and towns participating in the state system would involve a cost sharing by the state of up to fifty percent of the capital costs of one of the following types of projects: construction of transfer facilities; upgrading of an existing municipal refuse incinerator; conversion of an existing municipal refuse incinerator to a transfer facility; upgrading existing transfer facilities. This program would be administered by the state solid waste agency. Applications for assistance would be required to meet state criteria, and only projects that were consistent with participation in the state system would be subsidized. Assistance would be limited to fifty percent of the costs of facilities meeting standard criteria set by the state. The amount of subsidization for a given community will be determined by the state, based on the population and waste

generation projections for that community. A number of municipalities have recently undertaken or are currently undertaking projects such as transfer station construction which would qualify for assistance under this program. It is proposed that assistance under this program be made possible to subsidize qualifying municipal projects undertaken any time after April 21, 1971, the date of the promulgation of strict disposal regulations by the State Department of Public Health.